Angelo State University Energy Savings Program
October 28, 2016

The Angelo State University Energy Savings Update is being submitted in accordance with Governor's Executive Order, RP 49, Energy Conservation by State Agencies.

A. Energy Goals

1. Campus Energy Use

Energy units are converted to kBtu to allow for comparisons of electricity and natural gas usage. Goals and energy use are then stated in kBtu/sq ft. Estimated savings are based on energy consumption for the same time period from the previous year normalized to current energy costs and campus square footage. It does not take into consideration the climate difference between periods.

In the fiscal year for 2016 the entire campus used 81.0439 kBtu/Sq Ft. That was a drop of 1.5% from the previous year, with an estimated savings of $49,881.74. This is the cost savings based on the criteria listed above and the change from the previous year. There has been a drop of 9.2% in the past 6 years.

In Table I, the campus energy use is broken down by utility type. The percent change column is the energy usage change from fiscal year 2015 to 2016.

Table I: Campus Energy Use (kBtu/Sq ft): FY2010-FY2016

Utility	FY10	FY12	FY15	FY16	% Change	Est. Savings
Electricity	60.6060	59.9600	60.5973	59.1652	Down 2.4%	$58,033.86
Nat. Gas	28.6709	23.5200	21.6775	21.8787	Up 0.9%	($8,152.12)
Total	89.2769	83.4800	82.2748	81.0439	Down 1.5%	$49,881.74

In Table II, the campus energy is broken down to compare FY2011 to FY2016; it shows a 3.8% decrease in overall kBtu usage per square feet. The savings is calculated from the usage change in the utility and the current price paid for that utility. The actual cost savings from FY2011 to FY2016 was $103,073 which mainly comes from the drop in price of both electricity and natural gas.

Table II: Campus Energy Use (kBtu/sq ft): Change from FY2011 to FY2016

Utility	FY 2011	FY 2016	% Change	Est. Savings
Electricity	61.2330	59.1652	Down 3.38%	$89,459.01
Nat. Gas	23.0541	21.8787	Down 5.10%	$13,613.63
Total	84.2871	81.0439	Down 3.84%	$103,072.65

2. House Bill 3693

In Compliance with House Bill 3693, Angelo State University set a goal to reduce total electrical consumption by 2% for Fiscal Year 2016. Table III below shows the kilowatt hours per square foot for the entire campus quarterly. This is all electrical usage whether it is in a building or on the grounds. It shows a 2.36% decrease for fiscal year 2016 as compared to the previous year.

Table III: Entire Campus Electricity Usage in kwh/sq ft

Fiscal Year Quarter	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2015	% change from previous year
1st Qtr	4.76	4.78	4.61	4.43	4.57	4.70	4.76	1.28%
2nd Qtr	4.41	4.34	4.10	4.00	4.03	4.15	4.08	(1.69%)
3rd Qtr	4.04	4.33	4.15	4.04	4.13	4.20	4.14	(1.43%)
4th Qtr	4.81	4.67	4.67	4.55	4.52	4.71	4.36	(7.43%)
Yearly Total	18.02	18.12	17.53	17.02	17.25	17.76	17.34	(2.36%)

3. Fleet Management

In FY2016, Angelo State University consumed 28,892 gallons of fuel. In FY2015, Angelo State University consumed 26,186 gallons of fuel. There was an increase of 6 vehicles and 2,706 gallons used but a drop of $19,123 in cost. The price per gallon dropped by 35% for FY2016 averaging $1.65/gallon.

In Table IV the vehicle fleet is broken down by number of vehicles, miles driven, gallons used, cost of those gallons, cost per mile and miles per gallon for fiscal years 2009 thru 2016.

Table IV: Fleet Vehicle Usage: FY2009 - FY2016

Vehicles	Number	Miles	Gallons	Cost	Cost Per Mile	Miles Per Gallon
FY2009	67	331,717	29,243	$66,231	$0.1997	11.3435
FY2010	71	296,695	26,862	$68,441	$0.2307	11.0452
FY2011	69	300,579	27,155	$85,071	$0.2830	11.0691
FY2012	67	291,577	26,389	$90,815	$0.3115	11.0490
FY2013	67	225,630	20,070	$68,108	$0.3019	11.2424
FY2014	66	233,940	21,467	$66,515	$0.2843	10.8977
FY2015*	68	148,339	26,186	$66,843	$0.4506	5.6648
FY2016*	74	181,722	28,892	$47,720	$0.2626	6.2896

*The fleet manager is looking into the discrepancies of these numbers and the report will be revised at a future date.

At the end of FY2016 there were 74 vehicles in the university's fleet. 19 of those vehicles are 2012 year models or newer, meaning 26% of the vehicles are 5 years old or newer. However, 32 of the vehicles (43%) are 10 years old or older.

B. Current Energy Reduction Plans

1. Campus Energy Use

A) Continue to monitor the upgrades/replacements to air handlers, electrical equipment and items at the central plant as according to the performance contract Angelo State University has with Tour Andover Controls (TAC). This is a $13 million dollar energy savings project for the university that is to be paid over the next 15 years (2021) with the money saved from the improvements. The installations were completed in February 2009.

B) Maintain consistent temperatures across campus and don't deviate to please individuals. The university has changed the original set points in order to save even more energy. For Cooling, a set point of 74 degrees (73 degrees was the original). For Heating, a set point of 68 degrees (70 degrees was the original). This change was adopted by the university in January 2011.

C) The elimination of personal space heaters.

D) Informing and training personnel to turn off computers, monitors, printers and such when not in use and overnight.

E) Closely monitor the utility meters for discrepancies and unexpected usage amounts. Verify anomalies and correct problems.

F) Inform university policy makers on the worst energy performing buildings and try to eliminate or make those buildings more efficient.

G) In January 2015 the Student Government Association started implementing a student-led energy conservation effort in the dormitories. The program focuses upon teaching students to turn out lights, set the AC at reasonable temperatures, and other simple energy saving steps that students can take. Essentially, it teaches them about how to be good stewards of their resources.

2. Fleet management

A) Continually improve overall fuel efficiency of fleet vehicles by replacing older, inefficient vehicles with newer, more efficient vehicles.

B) Continue the aggressive Preventative Maintenance program to maintain all vehicles at their peak efficiency.

C) Continue to utilize the State's Fleet Data Management System. The Fleet Management office will continue to use the State Fleet database to monitor vehicle utilization, efficiency, maintenance and accuracy of vehicle reporting. Any discrepancies will immediately be addressed with appropriate vehicle custodians.

D) Educate personnel on the efficient use of University vehicles. The Fleet Management office has informed all vehicle custodians of the Governors' Executive Order and the university's established goal of 12 mpg.

E) Continue to expand the use of electric carts. ASU already has newer carts on order that are more efficient and plans to continue expanding the usage of carts over gas powered vehicles in years to come.

C. Future Energy Reduction Plans

1. Continue gathering data on the use of roof top solar cells for lowering the costs of electricity. Also continue working with Solar array plant that is planned to be built in the area to possible purchase power from them.

2. The continued infrastructure improvements and use of software monitoring and scheduling under the performance contract.

3. The Information Technology department is looking into different ways to lower the energy consumption of the 1800+ computers on campus.

4. Use energy efficient products when remodeling and expanding buildings. Plan for LEED certifications on any major expansions or new buildings.

D. Fuel Consumption Reduction Plans

1. The Fleet Management office will network with vehicle custodians to exchange information on vehicle efficiency and solicit additional best practices and other creative initiatives to improve the efficiency of the university vehicle fleet.

2. For all parties to encourage facility technicians and other departments to use electric carts when at all possible.

3. The Fleet Management office will continue to use off site shops to keep the vehicles in the best condition possible to increase fuel efficiency.

4. When funds are available, acquire new vehicles and dispose of older less efficient ones.